

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (Currently Amended) A keyboard musical instrument comprising:
 - an acoustic keyboard musical instrument including
 - a case having a bottom board ~~for~~ defining a bottom of said case, said bottom board having a first portion and a second portion, wherein said second portion is generally equal in thickness to said first portion and said second portion being formed with plural holes,
 - and
 - ~~a side board connected to the periphery of said bottom board for defining a side surface of said case, said bottom board being formed with plural holes, and~~
 - a tone generating mechanism housed in said case and having plural keys selectively depressed and released for generating tones and
 - a rear rail provided on said first portion of said bottom board and receiving certain end portions of said plural keys; and
 - an automatic playing system actuating said tone generating mechanism for generating said tones without any fingering of a human player, and including

plural actuators having respective plungers passing through said plural holes and reciprocally moved for actuating said tone generating mechanism, ~~and~~

a holder that extends from said case, said holder holding said plural actuators,

respective converters for converting a certain sort of energy to a force exerted on said plural plungers and

a controller connected to said converters so as to selectively drive said plungers to actuate said tone generating mechanism.

2. (Original) The keyboard musical instrument as set forth in claim 1, in which each of said plural holes has a cross section wider than a cross section of associated one of said plungers so that said each of said plural holes is moved without friction on an inner surface defining said associated one of said plungers.
3. (Original) The keyboard musical instrument as set forth in claim 1, in which said each of said plural holes has a cross section wider than a cross section of associated one of said plungers and narrower than a cross section of associated one of said converters.
4. (Original) The keyboard musical instrument as set forth in claim 1, in which said converters are arranged in a staggered manner, and said plungers are

projectable from and retractable into the associated converters so that said plural holes are arranged in said staggered manner.

5. CANCELED.

6. (Currently Amended) The keyboard musical instrument as set forth in claim 1, in which each of said plungers has a shaft portion and a head portion made of resilient material and having a cross section wider than a cross section of said shaft portion, and said cross section of said head portion is narrower than a cross section of an associated one of said plural holes so that said plunger is capable of being passed through said associated one of said plural holes ~~from an obverse surface of said bottom board in an assembling work.~~

7. (Original) The keyboard musical instrument as set forth in claim 1, in which said plural actuators further have stoppers respectively secured to said plungers, and each of said plural holes has a cross section wider than a cross section of associated one of said stoppers so that said associated one of said stoppers is movable in said each of said plural holes.

8. (Currently Amended) The keyboard musical instrument as set forth in claim 1, in which said plural actuators further have respective ~~bushes~~ bushings formed with through-holes and engaged with said bottom board for closing said plural holes, and said plungers pass through said through-holes of said ~~bushes~~ bushings.

9. (Currently Amended) The keyboard musical instrument as set forth in claim 1, in which said tone generating mechanism further includes
- ~~plural keys rotated by said human player or said plural actuators,~~
- plural action units respectively linked with said plural keys, respectively, and selectively actuated by said plural keys,
- strings vibratory for generating said tones and
- plural hammers respectively linked with said plural action units and driven for rotation by said plural action units for striking said strings.
10. (Original) The keyboard musical instrument as set forth in claim 9, in which said plural keys, said plural action units, said strings and said plural hammers are housed in said case forming a part of a grand piano.
11. (Original) The keyboard musical instrument as set forth in claim 9, in which said plural keys, said plural action units, said strings and said plural hammers are housed in said case forming a part of an upright piano.
12. (Original) The keyboard musical instrument as set forth in claim 1, in which said converters are used for converting electric power to a magnetic force, and said plunger projects from said converters in the presence of said magnetic force and is retracted into said converters in the absence of said magnetic force.

13. (Original) The keyboard musical instrument as set forth in claim 12, in which said converters are solenoids.
14. (Currently Amended) A method for retrofitting an acoustic keyboard musical instrument including keys movable over a bottom board and having certain end portions brought into contact with a rear rail extending on a first portion of said bottom board to an automatic player keyboard, the method comprising ~~the steps~~ of:
- a) preparing a ~~handy~~ tool and an automatic playing system including a controller and plural actuators having respective plungers and respective converters to be connected to said controller for converting a certain sort of energy to a force to be exerted on said plunger;
 - b) determining hole-forming portions of a second portion of said bottom board ~~forming a part of said acoustic keyboard musical instrument and, said second portion being equal in thickness to the first portion, said bottom board having a surface from which a side wall extends connected to the periphery of a side board~~;
 - c) forming holes ~~at~~ through said hole-forming portions by using said ~~handy~~ tool; and
 - d) providing said converters in a space below said bottom board in such a manner that said plungers reach a space under a tone generating mechanism of ~~said~~ the acoustic keyboard musical instrument through said holes.

15. (Currently Amended) The method as set forth in claim 14, ~~in which said step b)~~
~~includes the sub-steps of~~ wherein determining hole-forming portions of a second
portion of said bottom board includes
- b-1) putting marks indicative of boundaries between the keys of the said
acoustic keyboard musical instrument on a surface of a member inserted
between said keys and said second portion of said bottom board;
 - b-2) calculating an intermediate point of each distance between the
adjacent marks, and
 - b-3) determining each of said hole-forming portions around said
intermediate point.
16. (Original) The method as set forth in claim 14, in which said acoustic keyboard
musical instrument is a grand piano so that said bottom board serves as a key
bed of said grand piano.
17. (Original) The method as set forth in claim 14, in which said acoustic keyboard
musical instrument is an upright piano so that said bottom board serves as a key
bed of said upright piano.

18. (Currently Amended) The method as set forth in claim 17, wherein providing said converters in a space below said bottom board includes ~~in which said d) includes~~ ~~the sub-steps of~~
- d-1) moving said plural actuators to a space under said second portion of said bottom board,
 - d-2) aligning said plungers with said holes,
 - d-3) lifting said plural actuators toward said bottom board so that said plungers are exposed to a space over said second portion of said bottom board through said holes, and
 - d-4) securing an actuator holder connected to said plural actuators to said case so that said actuators are provided in said space below said second portion of said bottom board.
19. (Original) The method as set forth in claim 18, in which each of said holes has a cross section wider than the widest cross section of associated one of said plungers.

20. (NEW) An acoustic keyboard musical instrument comprising:

a case having a key bed, said key bed having at least a first portion and a second portion, said second portion generally equal in thickness to said first portion, said second portion being formed with plural holes;

a tone generating mechanism housed in said case and having plural keys selectively depressed and released for generating tones, said plural keys operatively connected to said key bed;

a rear rail provided on said first portion of said key bed, said rear rail receiving end portions of said plural keys;

an automatic playing system actuating said tone generating mechanism for generating said tones without any fingering of a human player, said automatic playing system including plural actuators having respective plungers passing through said plural holes formed in said second portion of said key bed; and

said respective plungers at least partially housed in a holder that extends from said case, wherein said plungers are operable for reciprocal movement that actuates said tone generating mechanism.